IV. The Issue with Incineration

Incineration of medical waste (whether on- or off-site) can emit mercury, dioxin, and other toxic air pollutants. Incineration is also expensive. Incineration should be limited to the relatively small portion of regulated medical/infectious waste for which incineration is the only legally or medically required treatment. Options to reduce the amount of waste being incinerated are source reduction, source separation, and alternative disposal techniques. Specifically, these include:

- Segregating mercury-containing waste from medical/infectious waste.
- Segregating ordinary plastic waste and recyclable materials from medical/infectious waste.
- Reducing the amount of red bag waste.
- Using reusable products when possible.

These options effectively minimize the formation of mercury and dioxin emissions and other pollutants by eliminating the combustion of precursor materials. To reduce the amount of mercury and dioxin emissions, see source reduction techniques, such as using alternative products, discussed in earlier chapters of this document.

The main purpose of incineration or alternative treatment technologies is to decontaminate waste by destroying pathogens. Healthcare facilities and providers have several options for disposal of regulated medical/infectious waste beyond incineration (see below). To review DES's solid waste rules for infectious waste (New Hampshire Code of Administrative Rules, Env-Wm 2604) see: www.des.state.nh.us/rules/swrules.pdf.

Alternative Medical Waste Treatment Strategies

Alternative treatment technologies must meet the treatment standards for infectious waste set forth in Env-Wm 2604. Examples include autoclaving, chemical treatment, plasma arc, microwave, low frequency radio wave and gamma irradiation, as well as combinations of these technologies. More and more hospitals and other medical waste generators have selected alternative technologies after evaluating and comparing capital costs, worker safety, ease and cost of operation and maintenance, confidence in the technology, and consideration of the public health benefits associated with the elimination of medical waste incineration.

An Alternatives to Incineration -- a New Hampshire case study

Dartmouth Hitchcock Medical Center in Lebanon went through the process of examining its criteria and priorities for replacing its incinerator, and in 1996 chose to install and operate autoclave units as an alternative treatment technology. These units have proven to be a reliable and cost-effective waste treatment method for handling their medical and infectious wastes.

The four basic alternative practices currently in use are thermal processes, chemical processes, irradiative processes, biological processes, and mechanical processes. The majority of non-incineration technologies employ thermal or chemical processes. Mechanical processes (such as shredding, grinding, mixing, agitation) may be used to supplement these treatment processes.

Each of these processes and a list of technology vendors are presented in detail in HCWH's *Non-Incineration Medical Waste Treatment Technologies* found at:
www.noharm.org/library/docs/Non-Incineration_Medical_Waste_Treatment_Techn.pdf

> For an executive summary of this document, go to:
> www.noharm.org/library/docs/Non-Incineration_Medical_Waste_Treatment_Te_2.pdf

Determining the best technology or combination thereof depends on many site-specific factors as well as cost. Key factors to consider when selecting non-incineration technologies are presented in HCWH's document, and include:

Throughput capacity
Types of waste to be treated
Microbial inactivation efficacy
Air emissions and waste residues
Regulatory acceptance
Space/footprint for equipment
Utility requirements
Waste volume and mass reduction
OSHA considerations
Noise and odor
Degree of automation
Reliability
Level of commercialization
Degree to which technology is proven
Vendor background
Community and staff acceptance

Not one technology offers a magic bullet to all the problems of medical waste disposal; each technology has its own advantages and disadvantages. Each healthcare facility must work with its staff and/or waste treatment facilities to determine which non-incineration technology best meets its needs, while minimizing the impact on the environment, enhancing occupational safety, and demonstrating a commitment to public health. HCWH's document provides general information to assist healthcare facilities to achieving these goals.